

## **CLAIMS**

What is claimed is:

1 1. In a network device for configuring a virtual private network (VPN), a method  
2 comprising:

3 receiving management traffic over the VPN; and

4 managing the network device using the management traffic received over the  
5 VPN.

1 2. The method of claim 1, wherein the managing the network device includes  
2 managing the network device using a secure in-band management configuration.

1 3. The method of claim 1, further comprising:

2 linking one or more management ports of the network device with the VPN.

1 4. The method of claim 1, further comprising:

2 linking a management function internal to the network device with the VPN.

1 5. The method of claim 1, further comprising:

2 performing Internet Protocol (IP) services or Multiprotocol Label Switching  
3 (MPLS) services.

1 6. A network device comprising:  
2 a plurality of input and output data links;  
3 a routing and forwarding module to route and to forward data on the input and  
4 output data links, to configure a virtual private network (VPN), and to receive  
5 management traffic over the VPN; and  
6 a management module to receive the management traffic from the VPN and to  
7 manage the network device using the management traffic.

1 7. The network device of claim 6, wherein the management module is to use a  
2 secure in-band management configuration.

1 8. The network device of claim 6, further comprising:  
2 one or more management ports; and  
3 a link to link the management ports with the VPN.

1 9. The network device of claim 6, further comprising:  
2 a link to link an internal management function with the VPN.

1 10. The network device of claim 6, wherein the routing and forwarding module is to  
2 perform Internet Protocol (IP) services or Multiprotocol Label Switching (MPLS)  
3 services.

1 11. A method for a network device comprising:  
2 configuring the network device to support a virtual private network (VPN); and

3 linking a management device or a management function with the VPN.

1 12. The method of claim 11, further comprising:

2 carrying management traffic for the network device using the VPN.

1 13. The method of claim 12, further comprising:

2 managing the network device using the management traffic carried on the VPN.

1 14. The method of claim 11, further comprising:

2 linking the VPN to the management device using an external link or linking the

3 VPN to the management function using an internal link.

1 15. The method of claim 11, further comprising:

2 performing Internet Protocol (IP) services or Multiprotocol Label Switching

3 (MPLS) services.

1 16. A network device comprising:

2 a routing and forwarding module to route and forward packets for the network

3 device and to configure the network device to support a virtual private network (VPN);

4 and

5 a link to link a management device or a management function with the VPN.

1 17. The network device of claim 16, wherein the routing and forwarding module is

2 to deliver management traffic on the VPN for the network device.

1 18. The network device of claim 17, further comprising:  
2 a management module to manage the network device using the management  
3 traffic delivered on the VPN.

1 19. The network device of claim 16, further comprising:  
2 an external link to link the VPN to the management device

1 20. The network device of claim 16, further comprising:  
2 an internal link to link the VPN to the management function internal to the  
3 network device.

1 21. The network device of claim 16, wherein the routing and forwarding module is  
2 to perform Internet Protocol (IP) services or Multiprotocol Label Switching (MPLS)  
3 services.

1 22. A network device for configuring a virtual private network (VPN) comprising:  
2 means for receiving management traffic over the VPN; and  
3 means for managing the network device using the management traffic received  
4 over the VPN.

1 23. The network device of claim 22, wherein the means for managing comprises  
2 means for managing the network device using a secure in-band management  
3 configuration.

1 24. The network device of claim 22, further comprising:  
2 means for linking one or more management ports of the network device with the  
3 VPN.

1 25. The network device of claim 22, further comprising:  
2 means for linking a management function internal to the network device with the  
3 VPN.

1 26. The network device of claim 22, further comprising:  
2 means for performing Internet Protocol (IP) services or Multiprotocol Label  
3 Switching (MPLS) services.

1 27. A network device comprising:  
2 means for configuring the network device to support a virtual private network  
3 (VPN); and  
4 means for linking a management device or a management function with the  
5 VPN.

1 28. The network device of claim 27, further comprising:  
2 means for carrying management traffic for the network device using the VPN.

1 29. The network device of claim 28, further comprising:  
2 means for managing the network device using the management traffic carried on  
3 the VPN.

1 30. The network device of claim 27, further comprising:  
2 means for linking the VPN to the management device using an external link or  
3 linking the VPN to the management function using an internal link.

1 31. The network device of claim 27, further comprising:  
2 means for performing Internet Protocol (IP) services or Multiprotocol Label  
3 Switching (MPLS) services.

1 32. A machine-readable medium providing instructions, which if executed by a  
2 processor, cause the processor to perform an operation comprising:  
3 configuring a network device to support a virtual private network (VPN);  
4 receiving management traffic over the VPN; and  
5 managing the network device using the management traffic received over the  
6 VPN.

1 33. The machine-readable medium of claim 32, further providing instructions,  
2 which if executed by the processor, cause the processor to perform an operation  
3 comprising:  
4 managing the network device using a secure in-band management configuration.

1 34. The machine-readable medium of claim 32, further providing instructions,  
2 which if executed by the processor, cause the processor to perform an operation  
3 comprising:

4 linking one or more management ports of the network device with the VPN.

1 35. The machine-readable medium of claim 32, further providing instructions,  
2 which if executed by the processor, cause the processor to perform an operation  
3 comprising:

4 linking a management function internal to the network device with the VPN.

1 36. The machine-readable medium of claim 32, further providing instructions,  
2 which if executed by the processor, cause the processor to perform an operation  
3 comprising:

4 performing Internet Protocol (IP) services or Multiprotocol Label Switching  
5 (MPLS) services.

1 37. A machine-readable medium providing instructions, which if executed by a  
2 processor, cause the processor to perform an operation comprising:  
3 configuring a network device to support a virtual private network (VPN); and  
4 linking a management device or a management function with the VPN.

1 38. The machine-readable medium of claim 37, further providing instructions,  
2 which if executed by the processor, cause the processor to perform an operation  
3 comprising:  
4 carrying management traffic for the network device using the VPN.

1 39. The machine-readable medium of claim 38, further providing instructions,  
2 which if executed by the processor, cause the processor to perform an operation  
3 comprising:  
4 managing the network device using the management traffic carried on the VPN.

1 40. The machine-readable medium of claim 38, further providing instructions,  
2 which if executed by the processor, cause the processor to perform an operation  
3 comprising:  
4 linking the VPN to the management device using an external link or linking the  
5 VPN to the management function using an internal link.

1 41. The machine-readable medium of claim 38, further providing instructions,  
2 which if executed by the processor, cause the processor to perform an operation  
3 comprising:  
4 performing Internet Protocol (IP) services or Multiprotocol Label Switching  
5 (MPLS) services.

1 42. A system comprising:  
2 one or more network devices to configure a virtual private network (VPN); and  
3 one or more links to link the VPN with at least one management device, the  
4 management device to facilitate management of the network devices by sending  
5 management traffic to the network devices via the links and VPN.

1 43. The system of claim 42, wherein the management device is to manage the  
2 network devices using a secure in-band management configuration.

1 44. The system of claim 42, wherein the network devices include one or more  
2 management ports to couple with the VPN.

1 45. The system of claim 42, wherein the network devices include an internal  
2 management function to link with the VPN.

1 46. The system of claim 42, wherein the network devices are to perform Internet  
2 Protocol (IP) services or Multiprotocol Label Switching (MPLS) services.